

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

| | | |
|--|---|---|
| To: Alban Tay Mahtani & De Silva 39 Robinson Road #07-01 Robinson Point Singapore 068911 | PCT NOTIFICATION OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty) (PCT Rule 71.1) | |
| | Date of mailing (day/month/year) | 22 FEB 2006 |
| Applicant's or agent's file reference 2050030KC 7033362 | IMPORTANT NOTIFICATION | |
| International application No. PCT/SG2005/000061 | International filing date (day/month/year) 1 March 2005 | Priority date (day/month/year) 15 March 2004 |
| Applicant TINGGI TECHNOLOGIES PRIVATE LIMITED et al | | |

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translations to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the *PCT Applicant's Guide*.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed invention is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

| | |
|---|---|
| Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929 | Authorized officer S. T. PRING Telephone No. (02) 6283 2210 |
|---|---|

PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)
(PCT Article 36 and Rule 70)

| | | |
|--|---|--|
| Applicant's or agent's file reference 2050030KC | FOR FURTHER ACTION | See Form PCT/IPEA/416 |
| International application No. PCT/SG2005/000061 | International filing date (<i>day/month/year</i>) 1 March 2005 | Priority date (<i>day/month/year</i>) 15 March 2004 |

International Patent Classification (IPC) or national classification and IPC

Int. Cl.

H01L 33/00 (2006.01)

Applicant

TINGGI TECHNOLOGIES PRIVATE LIMITED et al

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--------------|---|-----------|---------------------|--------------------------|------------|----------|--------------------------|-------------|--|--------------------------|------------|----------------------------|-------------------------------------|-----------|---|--------------------------|------------|-------------------------|--------------------------|-------------|--|--------------------------|--------------|---|
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 3 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of 1 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or table related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>4. This report contains indications relating to the following items:</p> <table> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> | | <input checked="" type="checkbox"/> | Box No. I | Basis of the report | <input type="checkbox"/> | Box No. II | Priority | <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | <input type="checkbox"/> | Box No. IV | Lack of unity of invention | <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | <input type="checkbox"/> | Box No. VI | Certain documents cited | <input type="checkbox"/> | Box No. VII | Certain defects in the international application | <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. II | Priority | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VI | Certain documents cited | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application | | | | | | | | | | | | | | | | | | | | | | | |

| | |
|---|--|
| Date of submission of the demand 9 January 2006 | Date of completion of this report 16 February 2006 |
| Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929 | Authorized Officer S. T. PRING Telephone No. (02) 6283 2210 |

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SG2005/000061

Box No. I Basis of the report

1. With regard to the language, this report is based on:

 The international application in the language in which it was filed

- A translation of the international application into translation furnished for the purposes of:
- international search (under Rules 12.3(a) and 23.1 (b))
 - publication of the international application (under Rule 12.4(a))
 - international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*): the international application as originally filed/furnished the description:

pages 1-13 as originally filed/furnished

pages* received by this Authority on with the letter of

pages* received by this Authority on with the letter of

 the claims:

pages 14-19 as originally filed/furnished

pages* as amended (together with any statement) under Article 19

pages* 20 received by this Authority on 9 January 2006 with the letter of 27 December 2005

pages* received by this Authority on with the letter of

 the drawings:

pages 1/7-7/7 as originally filed/furnished

pages* received by this Authority on with the letter of

pages* received by this Authority on with the letter of

 a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.3. The amendments have resulted in the cancellation of: the description, pages the claims, Nos. the drawings, sheets/figs the sequence listing (*specify*): any table(s) related to the sequence listing (*specify*):4. This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)). the description, pages the claims, Nos. the drawings, sheets/figs the sequence listing (*specify*): any table(s) related to the sequence listing (*specify*):

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SG2005/000061

| | | | |
|---|--|-----|--|
| Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | | |
| 1. Statement | | | |
| Novelty (N) | Claims 1-53 | YES | |
| | Claims | NO | |
| Inventive step (IS) | Claims 1-53 | YES | |
| | Claims | NO | |
| Industrial applicability (IA) | Claims 1-53 | YES | |
| | Claims | NO | |
| 2. Citations and explanations (Rule 70.7) | | | |
| <u>Novelty and Inventive Step</u> | | | |
| WO 2001/047039 LUMILEDS LIGHTING US LLC | | | |
| US 6 627 921 WONG et al | | | |
| US 6 821 804 THIBEAULT et al | | | |
| WO 2004/102686 CREE INC | | | |
| JP 2001-168387 TOYODA GOSEI CO LTD | | | |
| <p>The above art describe the removal of the substrate but it is always replaced by another layer. They disclose a reflecting layer but it is disposed on the textured surface of the substrate which is contained in the middle of the device, not on the bottom or it is without the substrate. Therefore the removal of the substrate and the patterning of the epitaxial layers thus revealed, with a reflecting ohmic layer on the top surface of the epitaxial layers can be said to novel and to have an inventive step.</p> | | | |

100/593107

Received 09 January 2006

SEARCHED INDEXED
SERIALIZED FILED
15 SEP 2006

20

50. A semiconductor device as claimed in any one of claims 43 to 49, wherein the thermally conductive metal is copper and the epitaxial layers comprise multiple GaN-related epitaxial layers.

5 51. A semiconductor device as claimed in any one of claims 43 to 50, wherein the semiconductor device is selected from the group consisting of: a light emitting device, and a transistor device.

10 52. A semiconductor device as claimed in any one of claims 43 to 50, wherein the second ohmic contact layer is selected from the group consisting of: blank, and patterned.

15 53. A semiconductor device fabricated by the method of any one of claims 1 to 42.

15